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AUTHOR	Martinez, Daniel
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ABSTRACT

This document, originally published in a journal, investigates whether matriculation works and if so how does it affect students. The document uses the data from a study done at the Riverside Community College District (RCCD), which addressed the effect of matriculation on student persistence. The RCCD data came from a variety of sources and focused on four areas: Assessment, counseling, SEP, and persistence. The document concludes that according to the regional data used matriculation does have a positive impact on student persistence. The author claims that students with the highest proportion of expected persistence combined assessment and counseling. Furthermore, out of the four colleges that were examined, each had different strengths in different areas. The author admits that there are certain limitations to his findings. They include the following: (1) Study does not take into account student demographics which may show a different pattern of which services are utilized by students; (2) The study omits orientation as a factor which may have an effect on the data; and (3) The study's measurement of service could be misleading. The author concludes that perhaps the most important aspect of the study is that it shows how effectively common goals can be accomplished if there is cooperation between colleges. (Contains 11 tables and 1 figure.) (MZ)

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Riverside Community College District

Institutional Research

Principal Investigator: Daniel Martinez, Ph.D.

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Matriculation Outcomes: A regional investigation

Does matriculation work? If it does work, how does it work? How does it affect students? Does it really make a difference? The hydra that is matriculation is a difficult area to study because there are several disparate areas that encompass it. A study of assessment and placement processes is as central to matriculation as is a study on the methods by which a prerequisite is established, for example. When matriculation first arrived on campuses in the late 1980's, many colleges did not know where to start. The RP Group (Research and Planning Group for California Community Colleges) published three manuals, known as the Local Research Options, to help colleges try to get a handle on evaluating matriculation. These documents were extremely useful and covered several different types of analyses that could be done to help evaluate matriculation, but it became evident rather quickly that assessment validation was going to take the lion's share of a researcher's time, leaving little time for other important research.

A recent study at the Riverside Community College District (RCCD) investigated the effect of some of the components of matriculation on student persistence. The particular services investigated in this study were assessment, counseling (not including the development of a Student Education Plan [SEP]), and SEP. Though there are eight components of matriculation, several do not affect students directly (e.g., coordination and training) while admissions affects all students. On the other hand, there are several components that are geared towards students before then enroll in their first class: assessment, orientation, and counseling. Though the development of a SEP is often considered just one of many counseling services available to students, it was counted as a separate service in an acknowledgement of the qualitatively different interaction it represents and because the matriculation standards address the SEP specifically. During the time periods used in this study, orientation was delivered to students

immediately after a grouped, timed assessment; therefore, all students who received assessment were counted as receiving orientation. Because of this inability to separate the data, orientation was not part of this study.

This study was then presented to the regional matriculation advisory group and a proposal was made to replicate this study within the region for all the colleges that wished to participate. This paper reports the regional study and discusses the outcomes of the study as well as some of the issues involved when performing a collaborative research project with other colleges.

The Regional Study

The RCCD study was seen as the first in a series of outcome studies for matriculation. It was envisioned that the independent variables could be used with different outcome variables, the latter of which could be changed relatively easy. Persistence was chosen as the first outcome variable because of the ease by which it could be obtained. When this was presented at the regional meeting, the group decided to use persistence as well for ease in collecting the data.

One of the challenges we had to face regarded data. The data for RCCD was available since the original study was originated there. The RCCD data were gathered from a variety of sources: a stand-alone PC system, the administrative computing system and copies of submitted MIS files. When the possibility of a regional study was discussed, one of the areas of concern was how the data were to be submitted. I suggested that the researchers could submit data in any number of standard formats (e.g., SPSS, EXCEL, ACCESS, ASCII) with the assumption that the data could be imported into ACCESS for processing and then imported to SPSS for analysis. Data were received in two formats – EXCEL and SPSS. Both types of files were easily imported to ACCESS as expected.

Subjects

Like the RCCD study, the subjects in this study were first-time college students in Fall 1998, Fall 1999, Fall 2000, or Fall 2001. Students were further narrowed down if they had a "long term" initial goal (A through E on SB 14). This was done to reduce the chances of comparing goal-oriented students with more "casual" students. Finally, students were eliminated from the sample if they had participated in the Guidance 45 course, "Introduction to College." This course requires students to participate in assessment and to develop an SEP.

Of the three colleges that submitted data, none of them had a semester-long orientation course like RCCD. One college noted that they did not feel comfortable with data before Fall 2000. Thus, the regional outcomes study only used the Fall 2000 and Fall 2001 cohorts.

Instructions were sent to the colleges on how to identify students and code data. A guiding principle of the regional study was to allow the colleges to use whatever data they thought was the most accurate.

- Assessment: Students were checked to see if they had participated in assessment before September 1st of the year of their first enrollment.
- Counseling: Students were checked to see if they met with a counselor for a service other than the development of an SEP before January 1st of the year following the semester of their first enrollment.
- SEP: Students were checked to see if they met with a counselor to develop an SEP (either a full SEP or one semester SEP) before January 1st of the year following the semester of their first enrollment.
- Persistence: the RP Group definition was used; that is, the student persisted if they enrolled in the spring term following their first Fall semester and received a valid grade.

For assessment, counseling, and SEP, if a student utilized the service, they were coded with a 1 or a 0 if they did not utilize the service. If a student persisted to the following Spring semester, they were coded with a 1; if they did not persist, they were coded with a 0.

Results

The individual colleges will not be revealed in the report, but will be reported as A, B, C, and D.

Frequencies are reported below for all the colleges for the four semesters requested, though the outcomes part of the study only used Fall 2000 and 2001. The number of first-time college students for all four Fall semesters who did not enroll in Guidance 45 was 16,625. Table 1 shows the number of students included by college while Table 2 shows the number of students included by Fall semester.

Table 1: Counts of first-time college students in study by college

Semester	Count	Percent
College A	1,405	8.5
College B	8,454	50.9
College C	3,578	21.5
College D	3,188	19.2
Total	16,625	100.0

Table 2 shows the increase in students in Fall 2000 and 2001 because one college (College D) did not feel comfortable with data from before that date.

Table 2: Counts of first-time college students in study by college

Semester	Count	Percent
Fall 1998	2,518	15.1
Fall 1999	3,549	21.3
Fall 2000	5,139	30.9
Fall 2001	5,419	32.6
Total	16,625	100.0

Tables 3 through 6 show the counts and percentages of students and the services they utilized as well as their persistence rates by college. These tables show that the services reported by College A were not reliable, especially the counseling and SEP contacts. Therefore, College A was not used in the outcomes study.

Table 3: Utilization of assessment service

	Assessed	Not Assessed
College A	155 11.0%	1,250 89.0%
College B	5,506 65.1%	2,948 34.9%
College C	2,134 59.6%	1,444 40.4%
College D	761 23.9%	2,427 76.1%
Total	8,556 51.5%	8,069 48.5%

Table 4: Utilization of counseling service

	Counseled	Not Counseled
College A	2 0.1%	1,403 99.9%
College B	2,058 24.3%	6,396 75.7%
College C	431 12.0%	3,147 88.0%
College D	1,954 61.3%	1,234 38.7%
Total	4,445 26.7%	12,180 73.3%

Table 5: Utilization of SEP service

	SEP	No SEP
College A	0 0.0%	1,405 100.0%
College B	1,021 12.1%	7,433 87.9%
College C	149 4.2%	3,429 95.8%
College D	492 6.0%	2,996 94.0%
Total	1,362 8.2%	15,263 91.8%

Table 6: Persistence

	Count	Percent
College A	716 51.0%	689 49.0%
College B	5,396 63.8%	3,058 36.2%
College C	2,323 64.9%	1,255 35.1%
College D	1,916 60.1%	1,272 39.9%
Total	10,351 62.3%	6,274 37.7%

Tables 7 through 10 show the revised percentages with College A excluded from the frequencies as well as limiting the data to Fall 2000 and 2001 only (N=9,936).

These tables show that just over half of the students (56.5%) participated in assessment, while almost 40% received some type of counseling service other than SEP. Regarding SEPs, only 1 out of every 10 students (10.6%) utilized this service. Approximately 60% of the students in the study persisted from their first Fall semester in 2000 or 2001 to the following Spring semester.

Table 7: Utilization of assessment service, Fall 2000 and 2001

	Assessed	Not Assessed
College B	3,105 67.6%	1,486 32.4%
College C	1,747 81.0%	410 19.0%
College D	761 23.9%	2,427 76.1%
Total	5,613 56.5%	4,323 43.5%

Table 8: Utilization of counseling service, Fall 2000 and 2001

	Counseled	Not Counseled
College B	1,574 34.3%	3,017 65.7%
College C	285 13.2%	1872 86.8%
College D	1,954 61.3%	1,234 38.7%
Total	3,813 38.4%	6,123 61.6%

Table 9: Utilization of SEP service, Fall 2000 and 2001

	SEP	No SEP
College B	718 15.6%	3,873 84.4%
College C	146 6.8%	2,011 93.2%
College D	192 6.0%	2,996 94.0%
Total	1,056 10.6%	8,880 89.4%

Table 10: Persistence, Fall 2000 and 2001

	Assessed	Not Assessed
College B	2,961 64.5%	1,630 35.5%
College C	1,363 63.2%	794 36.8%
College D	1,916 60.1%	1,272 39.9%
Total	6,240 62.8%	3,696 37.2%

A logit analysis was performed to accommodate the dichotomous outcome variable. In an effort to find a plausible representation of the data, several models were constructed. The first model included only the main effects of the individual services on persistence. The Likelihood Chi-square was significant, indicating that there were probably significant interaction effects among the services on persistence. Consequently, a second model was run adding all of the

two-way interactions between the three services (assessment and counseling, assessment and SEP, counseling and SEP). The Likelihood Chi-square value (1.4755) for this model indicated that it fit the data adequately. However, several of the parameters, in particular the assessment by SEP and counseling by SEP parameters, did not significantly differ from zero.

A third model was run with the three services and only the assessment and counseling interaction. The Likelihood Chi-square was not significant, indicating that the model was a good fit. In addition, all four parameters (the three individual services and the assessment by SEP interaction) were significantly different from zero. The difference in Likelihood Chi-squares between models 2 and 3 was not significant (L^2=1.62, df=2), indicating that removing some of the two-way interactions from the model did not significantly impact the goodness of fit. Thus, Model 3 was selected as the preferred model because it provided the most parsimonious, yet plausible, description of the data. Table 11 shows the logit results for the relationship between utilization of service and persistence as well as the comparison of the three models discussed above.

Table 11: Goodness-of-fit statistics for logit models of persistence

Models	Likelihood Ratio Chi-square	df	p
1. A, C, S	49.62	4	<.01
2. A, C, S, AxC, AxS, CxS	1.48	1	.2245
3. A, C, S, AxC	3.10	3	.3771

A=Assessment, C=Counseling, S=SEP

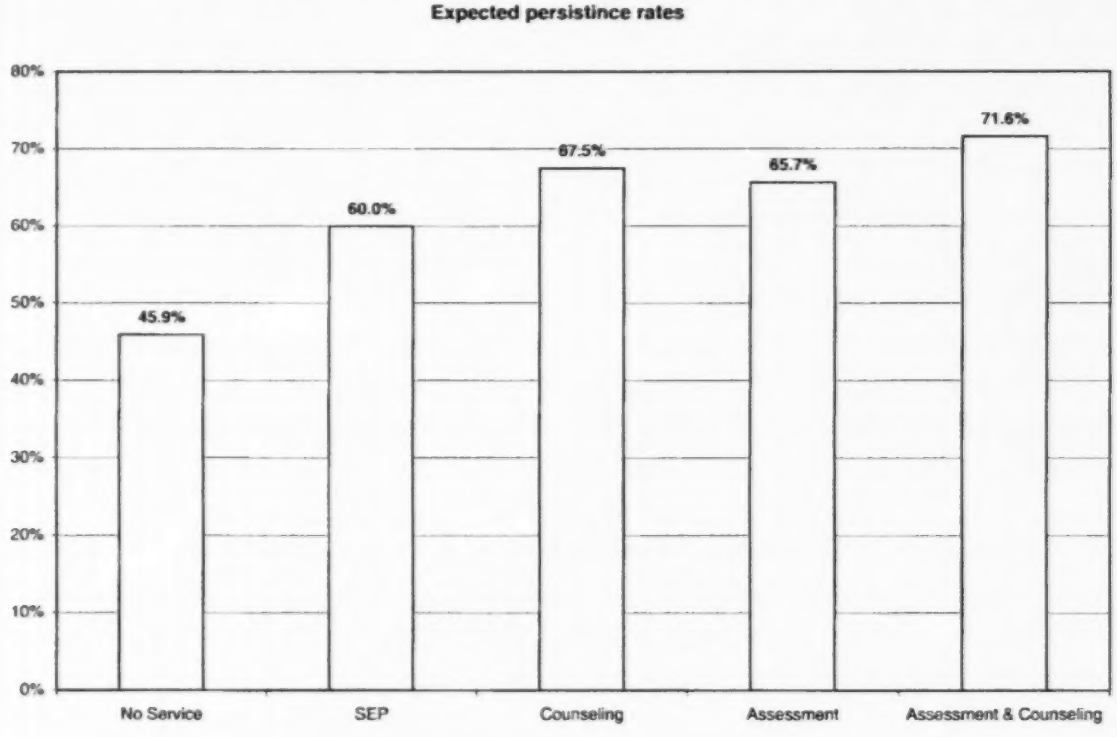
Table 12 shows the parameters for model 3. It shows that students who utilized assessment, counseling and SEP services or the combination of assessment and counseling were more likely to persist from their first semester to the next. Figure 1 shows the expected persistence rates based on the expected frequencies of the logit model.

Table 12: Parameter estimates for persistence

Parameter	Estimate	SE of Estimate	Z-value	Asymptotic 95% CI Lower	Upper
A	.1947	.0735	2.65	.05	.34
C	.2754	.0597	4.61	.16	.39
S	.5700	.0776	7.35	.42	.72
AxC	.6172	.0907	6.80	.44	.80

A=Assessment, C=Counseling, S=SEP

Figure 1: Expected persistence rate by service



Logit analyses were performed on the data for College B, College C, and College D separately for the Fall 2000 and 2001 cohorts. Below is a summary of the final logit model for each college.

College B (N=4,591). Each service separately and the interaction of assessment and counseling were all positively associated with persistence (L^2=1.99, df=3, p=.5744).

College C (N=2,157). No interactions were significant, but each service separately was positively associated with persistence (L^2=1.99, df=4, p=.7383).

College D (N=3,188). No interactions were significant and only counseling and SEP were positively associated with persistence. (L^2=10.21, df=5, p=.0695).

Discussion

Using this regional data, it appears that matriculation does have a positive impact on student persistence. The individual services for matriculation are positively associated with increased persistence as demonstrated through the logit analysis. It is important to note that though only a relative few students met with a counselor or developed an SEP (38.4% and 10.6%, respectively), both were significantly associated with persistence, compared to the percentage of students who utilized assessment (56.5%). It is also interesting to note that the combination of assessment and counseling produced the highest proportion of expected persistence.

The individual analyses by college show strengths for each. College B appears to have the most balance approach to matriculation, given that each of the services individually as well as the combination of assessment and counseling were found to contribute to persistence. College C also appears to have a balanced approach to matriculation, given that each of the services was positively associated with persistence. Perhaps the lack of an interaction is due to the relatively low number of counseling and SEP contacts (13.2% and 6.8%, respectively). College D had about twice as many counseling contacts as the other colleges (61.3%) and relatively few assessment contacts (23.9%). The researcher at College D was contacted to confirm the numbers and it was noted that the low numbers in assessment may be due to the fact that assessment was not mandatory for the terms in question.

This study has several limitations. First, it did not take into account student demographics which may show a differential utilization pattern of services. Also, omitting orientation from the study may have reflected the influence of this service in one of the other areas. Another area of concern is the measurement of the service. The lack of specificity regarding what constitutes a contact – a decision that resides with the individual college – may have vastly different meanings and therefore, the contact information may be measuring different type of service delivery.

One of the strengths of the study is that the outcome variable can be changed easily, thus making future studies easier. The combination of data from colleges in the region also shows strengths and weaknesses from the region, allowing for the sharing of ideas and advice.

Perhaps the most significant feature of the study is the ability to show the level of cooperation between colleges to accomplish a common goal. The feedback and advice from colleagues at the different colleges was very helpful in strengthening this study.

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Signature: [signature]	Printed Name/Position/Title: Daniel Martinez, Associate Director, Institutional Research
Organization/Address: Riverside Community College District	Telephone: 909/222-8248 FAX: 909/222-8877
	E-Mail Address: daniel.martinez@rcc.edu Date: 10/6/03

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